TB in the Elderly

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October 28, 2015

Oxford County
Why does it even matter??

- 300 cases of TB / year in Toronto
- About 1/4 are over 65 years old
- Many LTC residents from high-TB countries
- Up to 5 TB cases a year in LTC residents

- It really can happen to your facility!
- TB in the lungs is infectious
- TB is a serious illness especially in elderly
- Contact follow-up for other residents, staff, visitors
TB Outbreaks in LTC…in rural Dufferin-Guelph

Figure 1. Room locations of residents with confirmed active cases and LTBI and air flow measurement results, May 1, 2010 to January 31, 2011 (n=28)
TB has a lot of baggage

- many people remember when TB was hard to cure – many have relatives who were very ill or died → TB can be scary
- many cultures link TB and “being dirty” or poor → TB can feel shameful, not a respectable illness
- TB is spread through the air → it can feel like you don’t have control
TB risk goes way up in elderly

Figure 3. Reported TB incidence rate by sex and age group in Canada, 2010

[Graph showing reported TB incidence rate by sex and age group in Canada, 2010.]
Why are TB rates higher in old age?

• Lots more TB around when elderly were growing up – high LTBI prevalence
• Decreased immune function with age
• Medical treatment
  Diabetes
  Dialysis
  Oncology
  Rheumatology, GI (TNF alpha inhibitors)
  HIV (4% of Toronto cases)
• Congregate settings: increased risk of transmission
**TB Infection (LTBI)**
(Not Active-Latent)
- +ve skin test
- not infectious
- no symptoms
- bacteria=dormant
- normal CXR
- medicine - optional

**TB Disease**
(Active-replicating)
- +ve skin test
- infectious *
- symptomatic *
- bacteria=multiplying
- abnormal CXR *
- must take medicine
TB 101

- Slow-growing bacteria
- Serious illness – but preventable, treatable, curable
- Treatment is 6+ months of special antibiotics
- TB in the lungs is infectious
- only 10% of people who get infected will get sick... months or years later
- All TB care and medication is free
Active TB disease – a slow illness

- New or worsening cough 2+ weeks
- Fever, night sweats
- Fatigue
- Anorexia
- Weight loss
- Hemoptysis
- Extra-pulmonary: varies with site
TB in the Body

TB in lungs = 2/3

TB elsewhere = 1/3
TB in the elderly: it can look like…

- Recurrent/non-resolving pneumonia
- Decreased level of function
- Chronic low-grade fever
- Chronic fatigue
- Cognitive impairment
- Disseminated, skeletal, genitourinary TB more common
The other reason it matters...

- LTC Act 2007:
  - residents must be screened for TB within 90 days prior to admission (or up to 14 days after)
  - Staff must be screened for TB in accordance with evidence-based practices
  - Same requirements in Retirement Homes Act 2010 (regs in effect Jan 2013)
New recommendations for screening residents: rule out active TB

- Physician assessment: symptoms, physical
- New or worsening cough for 3+ weeks, fever, fatigue, loss of appetite, weight loss...failure to thrive
- CXR (PA and lateral)
- If either symptoms or CXR positive → 3 sputum for TB smear and culture
- Do NOT admit until 3 sputums culture neg (7 weeks)
- No TST required unless <65 (ie young enough preventive treatment may be an option)
Why the change – no TST??

• Re-thinking the rationale and benefits of screening

• Not screening for latent TB (LTBI)!
  • Very limited opportunity to give preventive treatment
  • Hepatotoxicity on INH preventive treatment up to 5% for those >65yrs

→ To prevent someone with infectious TB entering LTC
• Best test for diagnosis = symptoms and CXR
• TST very unreliable in active TB disease (25% negative)
Why the change #2?

• Baseline in case of contact-follow-up in future? No!
  • TST increasingly unreliable with age/co-morbidities
  • TST extremely unreliable in active TB disease (25% neg)
  • Staff/visitor TST much more reliable indicator of transmission
  • Guelph outbreak experience

• All other provinces using CXR not TST for many years
• Consistent with 2013 Canadian TB Standards
TST reactivity declines with age

“findings in this report suggest...considerable limitations in utilizing tuberculin testing in control of TB in institutions for the elderly”

Dorken et al Chest 1987
N=933 LTC residents, British Columbia
TB screening for residents <65

- Include TST
- Once active TB ruled out, if TST positive consider benefit of LTBI treatment
- Many younger LTCF patients have co-morbidities putting them at high risk for progression to active TB
TB: from the World to Ontario

Estimated TB incidence rates, 2012

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.


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...born in a “TB-endemic country”

- TB rate in Canada before 1950 = same rate as Burundi, Azerbaijan, Guyana in 2012
- 100-130 / 100,000 per year
What to do if you suspect TB

- Assume infectious – isolate immediately
- Transfer to hospital for work-up?
- single room, keep door closed and limit visitors until TB ruled out
- Staff / visitors should wear N95 while in room
- Resident should wear surgical mask while around others if tolerated
- Call public health for input and advice
- Staff with suspect pulmonary TB should stay home from work until infectious TB ruled out
Work-up for active TB

- Sputum x3 (or bronch washings, or biopsy) for:
  - AFB smear (24 hours)
  - Nucleic acid amplification tests to confirm MTB (if AFB+ve): AMTD (1-2 days)
  - Culture (1-7 weeks)
  - Send directly to provincial public health lab!
- Radiology
Standard Treatment: 4 drugs, 6+ months

• GUIDED BY DRUG SENSITIVITIES!!

• 2 months bactericidal phase
  INH, RIF, PZA, EMB

• 4 months continuation phase
  INH, RIF

• Extend treatment if
  – extensive disease
  – non-standard medication regimen
• Patient goal is comfort, not cure
• Public health goal is no transmission

→ extrapulmonary TB: don’t treat (after pulmonary TB ruled out)
→ pulmonary TB: consider treatment to render/maintain non-infectious ie so no need for respiratory isolation, masks, etc.
How is TB Transmitted?

- TB disease in the lungs or throat
- **ill person** coughs the active TB bacteria into the air
- Requires close, frequent, prolonged exposure

→ Household most at risk
TB is not Transmitted by….
Infectiousness

- Only respiratory TB infectious
- Smear (AFB) +ve
- Cavitary
- Coughing
- Close, prolonged contact
TB and the public’s health

• TB is reportable – public health is involved with every case
  • if someone has active TB they must stay home from school / work until not infectious
  • PHNs support patient through treatment

• for every case PH looks at possible contacts and makes sure they get follow-up
  • results reviewed – expand if necessary

• All TB care and medication is free
Health care staff are people too

TB risk for Health Care Workers also reflects

• Risk of TB exposure
  • rate in country of origin
  • Family / friend history of TB
  • Occupational exposure to TB (rare in Ontario)
• Personal health (immunocompromising conditions)
Health care staff are people too

TB risk TO staff and FROM staff

- screening at hire, chance for INH prophylaxis, workplace policies for ill staff, contact follow-up when necessary
Screening staff: no change

- 2-step TST on hire (or within prior 6 months)
  - If neg 2-step more than 6 months ago – update with single TST
  - If documented positive TST (>10 mm) in past: do not repeat

- If TST positive (in past, or new) → physician symptom assessment and CXR
  - CXR within prior 3 months ok so long as no symptoms

- If positive sx or CXR
  → sputum x3 for TB smear and culture
  → DO NOT start work until physician provides documentation that person does not have active TB
• NO repeat / annual TST or CXR recommended
• Same screening requirements for contract staff and for students
• Confirm TB screening is complete with agency/school – should NOT work before assessments completed
• Same screening requirements for volunteers expecting to work regularly half-day/week or more
Practical bits

- All TB medication is free through local public health
- TST is free for all contacts (but not for routine workplace screening)
- More information, hand-outs in multiple languages, and these recommendations available on-line
- Need advice? Think you might have an active case? call public health: Oxford County 519-539-9800

http://www.oxfordcounty.ca/Health
Key issue in elderly is active TB, not LTBI
There is no perfect screening test, especially in elderly
If you need an intake CXR, get it before admission!
TB risk in elderly is ongoing, not only at intake: high level of TB awareness even more important than intake screening
At least as important: staff screening (AND good LTBI counselling!)
Tuberculosis

Tuberculosis is preventable, treatable and curable!

The Tuberculosis Prevention & Control Program at Toronto Public Health works with health professionals and the community to reduce the incidence and impact of TB in Toronto and to provide support for individuals with TB and their families.

We offer various programs and services.

Contact Us

TB Prevention and Control Program
Toronto Public Health
Tel: 416-338-7600
Monday to Friday
8:30 a.m. - 4:30 p.m.

Ask to speak to someone in the TB Program.

Email us at targettb@toronto.ca

Photo Gallery: TB care in 1900's Toronto
Questions?

erea@toronto.ca
Tel 416-525-3794

www.toronto.ca/health/
Tel 416-338-7600
The Online TST/IGRA Interpreter

Version 3.0

The following tool estimates the risk of active tuberculosis for an individual with a tuberculin skin test reaction of ≥5mm, based on his/her clinical profile. It is intended for adults tested with standard tuberculin (5 TU PPDS, or 2 TU RT-23) and/or a commercial Interferon Gamma release assay (IGRA). For more details about the algorithm used, go to the About page. The current version of the algorithm contains modifications of the original version, which was detailed in a paper by Menzies, et al. (2008). For further information see references, or contact dick.menzies@mcgill.ca

Please select the best response for each field:

<table>
<thead>
<tr>
<th>TST Size:</th>
<th>IGRA Result:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select...</td>
<td>IGRA Not Done</td>
</tr>
</tbody>
</table>

Age at immigration (if person immigrated to a low TB incidence country):

<table>
<thead>
<tr>
<th>Age:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select...</td>
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</tbody>
</table>

Country of birth:

| Select... |

BCG status: Select...

For more info, visit: BCG World Atlas.

Recent contact with active TB: No Contact

Please select all the conditions that currently apply to the patient:
(If none of these conditions apply, please leave boxes unchecked)

- [ ] AIDS
- [ ] Abnormal chest x-ray: fibronodular disease
- [ ] Chronic renal failure requiring hemodialysis
- [ ] Diabetes Mellitus (all types)
- [ ] Recent TB infection (TST conversion ≤ 2 years ago)
- [ ] Silicosis
- [ ] Tuberculosis Factor (TNF)-alpha inhibitor(s)
- [ ] Abnormal chest x-ray: granuloma
- [ ] Carcinoma of head and neck
- [ ] Cigarette smoker (>1 pack/day)
- [ ] HIV infection
- [ ] Transplantation (requiring immune-suppressant therapy)
- [ ] Treatment with glucocorticoids
- [ ] Underweight (< 80% of ideal body weight or

Results

Once you have completed the form, click on "Submit" and your results will show up in this space.

For inquiries, and suggestions please contact dick.menzies@mcgill.ca.
Below are the results for a patient with a TST reaction of 10-14 mm, who is 75 years old, born in China, Shanghai, immigrated at age 32, whose BCG status is Never vaccinated or unknown, who has had no contact with active TB, and who can be characterized by:

Abnormal chest x-ray: granuloma
Diabetes Mellitus (all types)

The likelihood that this is a true positive test (PPV) is: 94.35%
The annual risk of development of active tuberculosis disease is estimated to be 0.45%.
The cumulative risk of active tuberculosis disease, up to the age of 80, is: 2.26%
If treated with INH the probability of drug-induced hepatitis is 5% and the probability of hospitalization for drug-induced hepatitis is 2.4%.
Respite (less than 3 months)

- Physician symptom assessment and physical
- If potential TB symptoms, get CXR +/- sputum
- No TST
Respiratory isolation for TB

- Criteria to d/c resp precautions:
  - Smear negative (3 sputum samples)
  - On adequate TB meds at least 2 weeks
  - Clinical improvement

“The principal risk for acquiring infection with M.Tb. is breathing”

Bloom and Murray, 1992